

Commissioner for Patents
Reply to Office Action of (April 17, 2007)
Page 2

Serial No. 10/815,826

LISTING OF SPECIFICATION AMENDMENTS

Please replace paragraph [0005] with the following amended paragraph:

[0005] Typical of the presently used fluids is Kim Mud (a blend of polysaccharide polymers, calcium carbonate, calcium lignosulfonate). This material provides high carrying capacity by an inherent thixotropic viscosity. The composition may contain potassium ions for reducing volume increases (swelling). This has the advantage of preventing hydration of moisture sensitive clays.

Please replace paragraph [0016] with the following amended paragraph:

[0016] ~~A surfactant~~ An organic natural surfactant (Ho Flo) was evaluated in Kim Mud for its effect on tar sand. Testing was done at 30°C. It was found that Ho Flo at 0.1L/m³ in Kim Mud improves the clumping of tar sand oil and prevents the stickiness of the oil to the testing container.

Please replace paragraph [0019] with the following amended paragraph:

[0019] Four lubricants were tested in Stable K (organic amine) mud to select the one with the least effect on tar sand. Testing was done at 23°C and lubricant concentration of 1.5 and 3.0 kg/m³.

Please replace paragraph [0020] with the following amended paragraph:

[0020] EZ Drill and EZ Drill II (biodegradable organic oils) appeared to soften the tar sand, although no obvious sign of dissolvability of tar sand was noticed.

Please replace paragraph [0026] with the following amended paragraph:

[0026] The second part of testing searched for an effective solvent of tar sands. Diesel, DMO 100 and HT-40N mixture of severely hydrotreated and hydrocracked base oil were tested at 23°C. The best solvent of tar from sand was Diesel with HT-40N being second best. DMO 100 was not found effective in removing the tar.

Please replace paragraph [0030] with the following amended paragraph:

[0030] In order to find the best tar remover, over 50 products were tested at various concentrations. Q'Clean™ (a mixture of petroleum hydrocarbons) was selected as the best tar

Commissioner for Patents
Reply to Office Action of (April 17, 2007)
Page 3

Serial No. 10/815,826

remover. Generally speaking, the product comprises hydrogenated heavy petroleum naphtha together with an organic solvent.

Please replace paragraph [0039] with the following amended paragraph:

[0039] The following fluid formulation was selected for its good rheology, fluid loss and tar sand cleaning ability:

PolyTar™ System

Kelzan XCD (<u>polysaccharide gum</u>)	0.75 kg/m ³
Staflo R (<u>sodium carboxymethyl cellulose</u>)	2 kg/m ³
Starpak DP (<u>modified starch</u>)	6 kg/m ³
Calcarb 325 (<u>calcium carbonate</u>)	10 kg/m ³
Calcarb 0 (<u>calcium carbonate</u>)	10 kg/m ³
Caustic Soda	pH 10
Q'Clean™ (<u>mixture of petroleum hydrocarbons</u>)	5 % v/v

Please replace paragraph [0040] with the following amended paragraph:

[0040] [[Date]] Data illustrating the effectiveness will be presented herein after.

Please replace paragraph [0044] with the following amended paragraph:

[0044] Q'Break™ (citric acid and amylase) (enzyme) at concentration of 2 kg/m³ is the best product to help with emulsion breaking and oil separation from the drilling fluid. It produces a fast reduction in mud viscosity, the emulsion breaks easily and the oil (Q'Clean™ +Tar) separates on top of fluid. After the treatment with Q'Break™ 2 kg/m³ and 24 hours static at 22°C, the oil left in emulsion in the mud was only 0.47 % v/v. Most of the oil phase (Q'Clean™ and dissolved Tar) was separated from the mud as a top layer and could be skimmed off.